

PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 08 FEB 2005

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| Applicant's or agent's file reference 78273853/RMH | FOR FURTHER ACTION | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416). |
| International Application No. PCT/AU2003/001296 | International Filing Date (day/month/year) 2 October 2003 | Priority Date (day/month/year) 2 October 2002 |
| International Patent Classification (IPC) or national classification and IPC Int. Cl. ⁷ A61K 31/12, 31/352, 31/353, 31/555, 33/24, A61P 35/00, C07F 15/00 | | |
| Applicant NOVOGEN RESEARCH PTY LTD et al | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 7 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheet(s).

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

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|---|---|
| Date of submission of the demand 23 April 2004 | Date of completion of the report 24 January 2005 |
| Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929 | Authorized Officer  S.R. IDRUS Telephone No. (02) 6283 2659 |

I. Basis of the report**1. With regard to the elements of the international application:***

- ☒ the international application as originally filed.
- ☐ the description, pages , as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- ☐ the claims, pages , as originally filed,
pages , as amended (together with any statement) under Article 19,
pages , filed with the demand,
pages , received on with the letter of
- ☐ the drawings, pages , as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- ☐ the sequence listing part of the description:
pages , as originally filed
pages , filed with the demand
pages , received on with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/fig.

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be nonobvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application,
☒ claims Nos: 1-15 (in part), 16-22 (in part),

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

- ☒ no international search report has been established for said claim Nos. 1-15 (in part), 16-22 (in part) see separate sheet.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

- ☐ the written form has not been furnished or does not comply with the standard.
☐ the computer readable form has not been furnished or does not comply with the standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

| | | |
|-------------------------------|--|-----|
| Novelty (N) | Claims | YES |
| | Claims 1-15 (in part), 16-22 (in part) | NO |
| Inventive step (IS) | Claims | YES |
| | Claims 1-15 (in part), 16-22 (in part) | NO |
| Industrial applicability (IA) | Claims 1-22 | YES |
| | Claims | NO |

2. Citations and explanations (Rule 70.7)

The International Search Report identified the following citations:

- D1) STN File Medline, abstract accession number 2001088116
- D2) STN File Medline, abstract accession number 97367506
- D5) STN File Medline, abstract accession number 2002151803
- D6) STN File Medline, abstract accession number 2000404390
- D7) STN File Medline, abstract accession number 96273517
- D8) STN File Medline, abstract accession number 91191699
- D9) STN File Medline, abstract accession number 91107211
- D10) STN File Medline, abstract accession number 92032982
- D11) STN File CA, abstract number 119:131038
- D12) ZYNER E. et. al., Acta Poloniae Pharmaceutica Drug Research, 1999, 56(2), pages 159-167
- D13) ZYNER E. et. al., Pharmazie, 1999, 54 (12), pages 945-946
- D14) LEI W. et. al., Anticancer Research, 1999, volume 19, pages 221-228
- D15) KANG B-J. et. al., Natural Product Sciences, 2000, 6(4), pages 165-169
- D16) WO 2002/002548
- D17) WO 2000/066576
- D18) WO 1999/049862
- D19) WO 1998/017662
- D20) EP 267155
- D21) WO 1980/002098
- D22) SEPULVEDA-BOZA, S et al, Synthetic Communications (2001) vol 31 no 12 pages 1933-1940
- D23) O'NEILL, M J et al, Phytochemistry (1986) vol 25 no 6 pages 1315-1322
- D24) WOLFBEIS, O S et al, Z. Naturforsch. (1984) 39b pages 238-243
- D25) ARORA, S K et al, Tetrahedron (1962) vol 18 pages 559-565

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. Claims 17, 18, and 19 are not clear because they appear to be independent claims, however, no definition has been given for "the formula (II)".

Similar objection obtains with respect to Claim 22 (cf. "the formula (IIa)" and "the formula (I)").

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of III

- (i) as claims 1-15 are broadly drafted it is not economically possible to search the full scope of the claims. With due consideration to the examples, the search was limited to the isoflavones, and
- (ii) claims 16-22 are directed to platinum-isoflavanoid complexes of formula (II), wherein the isoflavanoid ligand is as exemplified in the specification (compounds 1-30 on pages 19-22).

Accordingly, the opinion given with regard to novelty, inventive step and industrial applicability are limited to parts of the claims which were searched.

Continuation of Box V

- D26) STN Chemical Abstract Accession No 135:355315
- D27) STN Chemical Abstract Accession No 135:121648
- D28) STN Chemical Abstract Accession No 124:341448
- D29) STN Chemical Abstract Accession No 124:316797
- D30) STN Chemical Abstract Accession No 124:140985
- D31) STN Chemical Abstract Accession No 115:68424
- D32) STN Chemical Abstract Accession No 114:41246
- D33) STN Chemical Abstract Accession No 112:69573
- D34) STN Chemical Abstract Accession No 102:59329
- D35) STN Chemical Abstract Accession No 102:59220
- D36) STN Chemical Abstract Accession No 97:109739
- D37) STN Chemical Abstract Accession No 95:111690
- D38) STN Chemical Abstract Accession No 82:97918
- D39) STN Chemical Abstract Accession No 76:140428
- D40) STN Chemical Abstract Accession No 70:57577
- D41) STN Chemical Abstract Accession No 63:54537
- D42) STN Chemical Abstract Accession No 61:61569
- D43) STN Chemical Abstract Accession No 126:139728
- D44) JHA, H C et al, Can. J. Chem. (1980) vol 58 no 12 pages 1211-1219
- D45) STN Chemical Abstracts Accession No 128:164027
- D46) STN Chemical Abstracts Accession No 117:124019

The Abstracts and journal article citations, respectively, D16-D21, D26-D43, and D45-D46 and D22-D25, and D44 disclosed methods and uses of compounds as per the presently claimed subject matter of Claims 1-3. Accordingly, Claims 1-3 are not novel and do not involve inventive step in the light of these citations.

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of Box V

D1, D2, D5-D11, D14 and D15 disclosed synergistic action of compounds as claimed in, say, Claim 1 with chemotherapeutic agents such as cisplatin. Accordingly, Claims 4-15 are not novel and do not involve inventive step in the light of these citations.

D1, D2, D5-D11, D14 and D15 do not disclose, teach or fairly suggest the formation or existence of a platinum-isoflavonoid complexes as defined in Claim 16. Accordingly, Claims 16-22 are novel and involve inventive step in the light of these citations.

D12, and D13 disclosed the synthesis, spectroscopy and *in vitro* alkylating activity of the platinum (II) and palladium (II) complexes of oximes of flavanone, their O-methyl ethers and aminoflavone. Accordingly, Claims 16-22 are not novel and do not involve inventive step in the light of these citations.

The invention relates to compounds, compositions, methods and therapeutic uses involving, containing, comprising, including and/or for preparing platinum-isoflavonoid complexes for the treatment of a variety of tumours. Accordingly the claimed subject matter has industrial applicability.

Claims 1-13, 17 and 21 include within their scopes the treatment of the human/animal body. As this is not excluded under Australian law, Rule 67.1 is complied with.